

REMARKS

Specification Objections and Claim Rejections Under 35 USC 112

The specification has been objected to, and claims 1, 19, and 20 have been rejected under 35 USC 112, second paragraph. In particular, the specification has been objected to the grammatically incorrect phrase “illustratively clarity” on page 13, second to last line. Claim 1 has been rejected due to something missing after “model-based,” whereas claims 19-20 have been rejected because of their recitation of the incorrect phrase “comprise comprises”.

Applicant has corrected these informalities to the specification and the claims, and requests that these objections and rejections be correspondingly withdrawn.

Rejections Under 35 USC 103

Claims 1-20 have been rejected under 35 USC 103(a) as being unpatentable over Kim (6,544,699). Claims 1, 7, and 14 are independent claims, from which the remaining claims ultimately depend. Applicant asserts that claims 1, 7, and 14 are patentable over Kim, such that the remaining claims are patentable for at least the same reason.

Significantly, the crux of independent claims 1, 7, and 14, as to which these claims have been explicitly limited, is that both “rule-based optical-proximity correction (OPC)” *and* “model-based OPC” are performed. As indicated in the patent application as originally filed in the discussion regarding the method 200 of FIG. 2, “[r]ule-based OPC is driven by user-defined rules.” By comparison, “[m]odel-based OPC is accomplished according to the simulation results of an empirical model.”

Applicant submits that Kim, however, does not disclose utilizing rule-based OPC in conjunction with model-based OPC. Rather, Kim is directed to simply “improved . . . model-based optical proximity correction.” (Abstract) More significantly, Kim teaches away from the

utilization of rule-based OPC in conjunction with model-based OPC, and thus teaches away from the claimed invention. As indicated in the background section of Kim:

OPC corrections can be added in a range of styles or degrees of “aggressiveness” that can be tailored to suit the lithographic problems at hand. For relatively mild problems, *these solutions can be described by a simple set of rules for design manipulations . . .*

*These rules . . . are usually quite straightforward to implement.* However, with real processes, experienced users being to see variations in the efficacy of these rules depending on the local layout context . . . . They respond by making *a more elaborate set of rules*, to begin to address each of these special cases, *and the descriptions become unwieldy. In this case, a more general description of the process, or process model, becomes the more efficient technique.*

....  
.... *[I]naccuracies of model based OPC can come from the inaccuracy of empirical data and measurements.*

....  
Thus, there is a need for a method to *improve the accuracy of model based OPC.*

(Col. 3, ll. 3-53; col. 4 ll. 15-17) (Emphasis added) That is, Kim discusses the two approaches to OPC, intimating that they are mutually exclusive – i.e., where rule-based OPC becomes unwieldy, model-based OPC can *instead* be used. (Kim further notes that model-based OPC can suffer from inaccuracies, such that the remainder of its entire disclosure is directed to improving the accuracy of model-based OPC.)

The inventions of claims 1, 7, and 14 are therefore patentably different from Kim’s teachings, as well as from any modifications that can be obviously made to Kim’s teachings. Kim’s model-based OPC cannot be modified to also include rule-based OPC, as Kim notes disadvantages associated with rule-based OPC in complex cases (e.g., that the rules become unwieldy to describe), and thus teaches that model-based OPC, *by itself*, should instead be used (presumably with the improvements thereto that Kim teaches). To modify Kim’s model-based OPC teachings to also perform rule-based OPC runs counter to reading the Kim reference in its

entirety, especially where the only statements in Kim regarding rule-based OPC indicate its lack of suitability for complex cases where an unwieldy number of rules would be required. For these reasons, therefore, claims 1, 7, and 14 cannot be rendered unpatentable over Kim. There is no suggestion or motivation to combine rule-based OPC with model-based OPC, and indeed Kim explicitly teaches away from combining rule-based OPC with model-based OPC.

Conclusion

Applicant has made a diligent effort to place the pending claims in condition for allowance, and request that they so be allowed. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Randy Tung, Applicants' Attorney, at 248-540-4040, so that such issues may be resolved as expeditiously as possible. For these reasons, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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